

WHAT IS CLAIMED IS:

1. A dermoscopy epiluminescence device comprising:
  - a) a generally circular optical lens defining an outer circumference to produce a magnified image of an object to be observed by a viewer;
  - b) an illumination array comprising:
    - i) a first light set comprising at least two illumination sources operable on a single circuit, each of said light sources radiating a first colored wavelength and said light sources positioned in spaced relation about the circumference of said optical lens to direct light upon the object;
    - ii) a second light set comprising at least two illumination sources operable on a single circuit, each of said light sources radiating a second colored wavelength and said light sources positioned in spaced relation about the circumference of said optical lens to direct light upon the object; and
  - c) a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening positioned in corresponding alignment with the generally circular optical lens to provide an open view of the object through the lens, and said outer ring positioned to polarize light radiated from said illumination array; and
  - d) a viewing filter positioned between a viewer and the object to polarize light reflected from the object wherein said viewing polarizer is cross-polarized relative to said first said ring filter.
2. The dermoscopy epiluminescence device of claim 1 further comprising a housing integrating the optical lens, the illumination array, the ring filter and viewing polarizer wherein said housing is adapted to engage and be affixed to a camera body such that the lens of the camera can capture images of the object to be observed through said optical lens and viewing polarizer.
3. The dermoscopy epiluminescence device of claim 1 wherein said illumination array further comprises a third light set comprising at least two illumination sources operable on a single circuit, each of said light sources radiating a third colored wavelength and said light sources positioned in spaced relation about the circumference of said optical lens to direct light upon the object.

4. The dermoscopy epiluminescence device of claim 3 wherein said illumination array further comprises a fourth light set comprising at least two illumination sources operable on a single circuit, each of said light sources radiating a fourth colored wavelength and said light sources positioned in spaced relation about the circumference of said optical lens to direct light upon the object.

5. The dermoscopy epiluminescence device of claim 1 further comprising a switch operable to selectively illuminate said first and second light sets.

6. The dermoscopy epiluminescence device of claim 1 wherein the light sources of said first and second light sets comprise LEDs.

7. The dermoscopy epiluminescence device of claim 1 further comprising a power source to power said illumination array.

8. The dermoscopy epiluminescence device of claim 7 herein said power source is a battery.

9. The dermoscopy epiluminescence device of claim 7 wherein said power source is a lithium battery.

10. The dermoscopy epiluminescence device of claim 7 wherein said power source is a USB connection.

11. The dermoscopy epiluminescence device of claim 4 wherein the colors of said first, second, third and forth light sources comprise white, UV/Blue (405 nm), green/yellow (565 nm) and orange/red (630nm).

12. A dermoscopy epiluminescence device comprising:

a) a generally circular optical lens defining an outer circumference to produce a magnified image of an object to be observed by a viewer;

b) an illumination array comprising;

i) a first light set comprising a plurality of white LEDs on a single circuit, said LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object;

ii) a second light set comprising a plurality of UV/Blue (405 nm) LEDs on a single circuit, said LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object;

iii) a third light set comprising a plurality of green/yellow (565 nm) LEDs on a single circuit, said LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object;

iv) a fourth light set comprising a plurality of orange/red (630nm) LEDs on a single circuit, said LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object;

c) a switch for selectively operating each light set.

13. A selective polarization device for examining translucent material comprising:

a) an optical lens to produce a magnified image of an object to be observed by a viewer;

b) a first polarized illumination source positioned relative to the optical lens to direct light upon the object;

c) a second polarized illumination source positioned relative to the optical lens to direct light upon the object;

d) a viewing polarizer positioned between a viewer and the object to polarize light reflected from the object wherein said viewing polarizer is cross-polarized relative to said first polarized illumination source and is parallel-polarized relative to said second illumination source; and

e) a housing integrating the optical lens, first and second polarized illumination sources and said viewing polarizer wherein said housing is adapted to engage and be affixed to a camera body such that the lens of the camera can capture images of the object to be observed through said optical lens and viewing polarizer.

14. The selective polarization device of claim 13 wherein said first polarized illumination source comprises a first light source and a first polarizer positioned between said first light source and the object said second polarized illumination source comprises a second light source and a second polarizer positioned between said second light source and the object.

15. The selective polarization device of claim 14 wherein said first light source comprises at least one luminous diode and wherein said second light source comprises at least one luminous diode.

16. The selective polarization device of claim 14 wherein said optical lens is generally circular defining an outer circumference;

17. The selective polarization device of claim 16 wherein said first light source comprises a plurality of spaced luminous diodes positioned about the circumference of said optical lens and said second light source comprises a plurality of spaced luminous diodes positioned about the circumference of said optical lens.

18. The selective polarization device of claim 17 wherein said diodes of said first light source are each positioned between diodes of the second light source about the circumference of the optical lens to form a ring of alternating diodes from said first and second light sources.

19. The selective polarization device of claim 17 wherein said first polarizer is a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens.

20. The selective polarization device of claim 17 wherein said second polarizer is a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens.

21. The selective polarization device of claim 17 wherein:

a) Said first polarizer is a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening of said annular ring is positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens, said outer ring having a plurality of openings sized and positioned to correspond to the diodes of the second light source such that light emitted from the diodes of the second light source is passed through the openings toward the object and light emitted from the diodes of the first light source is polarized by the first polarizer filter; and

b) Said second polarizer is a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening of said annular ring is positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens, said outer ring having a plurality of openings sized

and positioned to correspond to the diodes of the first light source such that light emitted from the diodes of the first light source is passed through the openings toward the object and light emitted from the diodes of the second light source is polarized by the second polarizer filter.

22. The selective polarization device of claim 14 wherein said first light source and said second light source have different color wavelengths.

23. The selective polarization device of claim 14 further comprising a power source to power said first and second light sources.

24. The selective polarization device of claim 23 wherein said power source is a battery.

25. The selective polarization device of claim 23 wherein said power source is a lithium battery.

26. The selective polarization device of claim 23 wherein said power source is a USB connection.

27. The selective polarization device of claim 15 wherein said luminous diodes are white light emitting diodes.

28. The selective polarization device of claim 15 wherein said luminous diodes are high light output Indium Gallium Nitride light emitting diodes.

29. The selective polarization device of claim 13 wherein said optical lens is a Hastings Triplet lens.

30. The selective polarization device of claim 13 wherein said optical lens is a 25mm diameter Hastings lens with a 10 X optical gain.

31. A dermoscopy epiluminescence device comprising:

a) a generally circular optical lens defining an outer circumference to produce a magnified image of an object to be observed by a viewer;

b) a first illumination source comprising a plurality of luminous diodes spaced about the circumference of said optical lens to direct light upon the object;

c) a second illumination source comprising a plurality of luminous diodes to direct light upon the object wherein each diode is positioned between diodes of the first illumination source about the circumference of the optical lens to form a ring of alternating diodes from said first and second illumination sources;

d) a first polarizer comprising a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening of said annular ring is positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens, said outer ring having a plurality of openings sized and positioned to correspond to the diodes of the second illumination source such that light emitted from the diodes of the second illumination source is passed through the openings toward the object and light emitted from the diodes of the first illumination source is polarized by the first polarizer filter;

e) a second polarizer comprising a planar annular ring filter defining a generally circular center opening and an outer ring, said center opening of said annular ring is positioned in corresponding alignment with the circular optical lens to provide an open view of the object through the lens, said outer ring having a plurality of openings sized and positioned to correspond to the diodes of the first illumination source such that light emitted from the diodes of the first illumination source is passed through the openings toward the object and light emitted from the diodes of the second illumination source is polarized by the second polarizer filter;

f) a viewing polarizer positioned between a viewer and the object to polarize light reflected from the object wherein said viewing polarizer is cross-polarized relative to said first polarized illumination source and is parallel-polarized relative to said second illumination source; and

g) a housing integrating the optical lens, first and second illumination sources, first and second polarizers and said viewing polarizer wherein said housing is adapted to engage and be affixed to a camera body such that the lens of the camera can capture images of the object to be observed through said optical lens and viewing polarizer.

32. The dermoscopy epiluminescence device of claim 31 further comprising at least one switch for initiating the first and second illumination sources.

33. The dermoscopy epiluminescence device of claim 31 wherein said first illumination source and said second illumination source have different color wavelengths.

34. The dermoscopy epiluminescence device of claim 31 further comprising a power source to power said first and second illumination sources.

35. The dermoscopy epiluminescence device of claim 34 wherein said power source is a battery.

36. The dermoscopy epiluminescence device of claim 34 wherein said power source is a lithium battery

37. The dermoscopy epiluminescence device of claim 34 wherein said power source is a USB connection.

38. The dermoscopy epiluminescence device of claim 31 wherein said luminous diodes are white light emitting diodes.

39. The dermoscopy epiluminescence device of claim 31 wherein said luminous diodes are high light output Indium Gallium Nitride light emitting diodes.

40. The dermoscopy epiluminescence device of claim 31 wherein said optical lens is a Hastings Triplet lens.

41. The dermoscopy epiluminescence device of claim 31 wherein said optical lens is a 15mm diameter Hastings lens with a 10 X optical gain.

42. A dermoscopy epiluminescence device comprising:

a) a generally circular optical lens defining an outer circumference to produce a magnified image of an object to be observed by a viewer;

b) an illumination array comprising;

i) a plurality of LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object, said LEDs comprising four sets of LEDs, each set operating on a different light circuit and each set of LEDs having a distinct color from the each of the other sets of LEDs;

c) a means for selectively operating each LED set.

43. A dermoscopy epiluminescence device comprising:

a) a generally circular optical lens defining an outer circumference to produce a magnified image of an object to be observed by a viewer;

b) an illumination array comprising;

i) a plurality of LEDs positioned in spaced relation about the circumference of said optical lens to direct light upon the object, said LEDs comprising at least two sets of LEDs, each set operating on a different light circuit and each set of LEDs having a distinct color from the other sets of LEDs;

- c) a means for selectively operating each LED set.